

SPECIALIST EDUCATION SERVICES

Computing Policy and Practice

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1 **RATIONALE**

This document should be read in conjunction with the Curriculum Statement, which outlines specific issues underpinning the curriculum approach at SES.

The very nature and purpose of the holistic provision at our establishments means that the focus is always on the 'whole child'. This is amplified in the range of documentation, policy and practice that reflects our philosophy of '24hr' learning, coupled with our "no limits' positive psychology.

The intensity of work in this respect, with both the child and where possible, family, is beyond what any child in a mainstream setting, and in many other specialist settings, would experience because of the very purpose and nature of practice at SES.

This document sets out the policy and principles that underpin the whole process of learning across the twenty-four hour learning experience available.

2 **CURRICULUM INTENT**

This document serves to give guidance to all staff with regard to common aspects of Computing, whether part of formal teaching time or part of a wider informal learning. It contains guidance on planning and developing Computing within subject areas. It also identifies the content of discreet Computing and computing subject teaching.

It is our belief that Computing should be fully integrated into the teaching and learning approaches in all subjects and in all aspects of the Learning Centre day. Equally access to Computing outside normal Learning Centre time not only enhances and supports academic learning but also responds to the need for a wider understanding of how Computing skills underpin so much more of our day-to-day interactions and transactions.

The intent of our Computing curriculum is to equip students to use computational thinking and creativity to understand and change the world. Computing has deep links with mathematics, science, and design and technology, and provides insights into both natural and artificial systems. The core of computing is computer science, in which students are taught the principles of information and computation, how digital systems work, and how to put this knowledge to use through programming. Building on this knowledge and understanding, students are equipped to use information technology to create programs, systems and a range of content. Computing also ensures that students become digitally literate – able to use, and express themselves and develop their ideas through, information and communication technology – at a level suitable for the future workplace and as active participants in a digital world.

Our broad aims are to ensure that all students:

- can understand and apply the fundamental principles and concepts of computer science, including abstraction, logic, algorithms and data representation

- can analyse problems in computational terms, and have repeated practical experience of writing computer programs in order to solve such problems
- can evaluate and apply information technology, including new or unfamiliar technologies, analytically to solve problems
- are responsible, competent, confident and creative users of information and communication technology.

There is a deeper dimension to the use of Computing for children with social, emotional and mental health difficulties which links with the process of building their 'self esteem'. It must be remembered that they have been in a world where previously they may well have been denied adult trust, support and confidence, and where they might have been denied access to equipment and resources because of their behaviour.

At SES we view Computing as a major contributor to validating our learner's sense of self and self worth, and confidence in their ability to access a digital information world, engage with it and express themselves through the use of technology.

The following specific objectives relate to Computing and the students at our establishments:

- To use a variety of information sources and Computing tools such as computers, iPads, iPods, TV, digital video, podcasts and Internet to analyse, process and present information as well as model, measure and control external events.
- To introduce students to the way in which computers and other mobile technology are used in society to ensure that students are confident in the use of computers and understand the consequences of their use
- To understand how changes in technology affect safety, including how to protect their online privacy.
- To ensure that students are competent and confident in the use of word and data processors
- To assist students to develop skills in information handling, logical thinking, problem solving and control techniques, thereby allowing them to take charge of their learning environment
- To allow students, through the modelling power of computers, to experience simulated activities, which create safe environments where they can explore problems which are beyond the normal scope of the learning environment
- By the use of specific and relevant software, to match the interactive nature of the computer to the particular individual needs of our students.
- To enhance work being undertaken in every area of the curriculum by integrating the use of computers and new technology wherever possible
- To ensure that staff regard the computer as a tool to be used across the curriculum in order that our students are able to gain maximum benefit from its use.
- To develop capability, creativity and knowledge in computer science and digital media.
- To encourage students to improve their ability to communicate with others by writing and refining texts for different purposes and audiences, by communicating face to face and by email.

- To encourage students to work collaboratively by discussing their own and others' work and working appropriately with others via email and use of the internet.

3 THE IMPLEMENTATION OF COMPUTING

3.1 PLANNING FOR COMPUTING EXPERIENCES

The teaching of Computing provides opportunities for students to experience and explore Computing in a variety of contexts.

Computing schemes of learning are highly personalised and derived from our underpinning Computing knowledge sequences, in order to support them in future pathways.

Our Computing knowledge sequences are guided by the National Curriculum Framework for Computing. As a non-core subject, it is arranged in steps from 1- 9. Age related expectations are indicated on the knowledge sequence. Each step is equivalent to the corresponding year group, e.g. step 3 is year 3.

The knowledge sequences for Computing are:

Algorithms and Creating Programs (KS1-2, Steps 1-6)

Information Technology (KS1-2, Steps 1-6)

Digital Literacy (KS1-2, Steps 1-6)

Binary (Step 7-8)

Cloud Storage (Step 7)

Hardware (Inputs/Outputs/Storage) (Step 7)

Hardware CPU/RAM (Step 8)

Algorithms/Computational Thinking (Step 7-9)

Hardware and Networks (Step 8-9)

Security (Step 8)

The students personalised Computing pathway builds on their previous learning, and knowledge is strengthened, broadened and deepened over time. This approach allows teachers to identify gaps in learning and provide opportunities that will allow them to recover and catch up over time.

Each scheme of learning provides the planning, including knowledge and objectives, for a unit of learning. A scheme of learning will relate to the SES knowledge sequence, as well as, where applicable, to the requirements of any examination syllabus chosen in KS4. They are intrinsically flexible; it is useful to use a variety of approaches and teaching strategies covering the same core unit to develop a variety of skills.

A scheme of learning may be designed to be revisited as many times as is judged necessary across all year groups and key stages. Schemes of learning are designed primarily to be enjoyable, to offer the chance of success, to enrich and enthuse the experience of each individual and to offer the opportunity of development across the experience of Computing.

This document details the planning, implementation and evaluation of Computing, which serves both as a reference point and working document for staff. Reference should also be made to the school's Acceptable Use of Technology Policy and the Assessment, Recording and Reporting Policy and Practice documents.

At SES we regard Computing (computer science, information technology and digital literacy) to be extremely powerful in delivering a high quality individualised curriculum. Computing is taught both as a discreet subject and as a cross-curricular subject. In many cases it may be the primary vehicle for key elements of a students highly personalised learning.

The Computing curriculum includes a clearly-articulated strand of computer science (including programming) as the underlying subject discipline, alongside the use and application of digital technology. These changes represent a qualitative shift in the subject, not an incremental change. At SES all staff support the development of Computing through twenty-four hour learning and personalised approaches, enabling students the opportunity to gain essential digital technology skills and knowledge. Therefore the computing curriculum is predominantly taught within the Learning Centre.

3.2 TEACHING AND LEARNING STYLES

Key elements of teaching methods in Computing are:

- Knowledge taught directly by the adult
- Relating use of Computing to real experiences such as fieldwork
- Creative activities related to elements of the topic or theme
- Question and answer
- Individual and group enquiries
- Use of a range of technology and media for presentation and creativity
- Interactive software/apps, school based or online

Approaches to learning will to a greater or lesser extent involve an enquiry method:

- Asking questions and possibly forming hypotheses
- Planning investigations
- Finding, collecting and recording information
- Analysing and interpreting information
- Drawing conclusions
- Evaluating and organising information

Activities that enhance student skills and experiences are:

- Discussion and debate with the teacher
- Writing/drawing using a range of software
- Presentation of findings in a variety of ways to a selected group or a wider audience
- Tasks which develop knowledge, skills and understanding
- Activities should be balanced between activities which are short in duration and those which have scope for development over an extended period
- Activities should, where appropriate, use students' own interests or questions

- Activities should, where appropriate, involve both independent and co-operative work
- Activities should encourage students to become confident in the use of a range of media and equipment
- Activities should encourage students to become confident in the use of a range of new technology

3.3 EQUAL OPPORTUNITIES

SES is committed to ensuring that all students are treated with equality of regard.

This will involve:

- Providing equality of opportunity in the computing curriculum in an attempt to maximise the potential of each individual student
- Treating as of equal value the different needs, interests and abilities of individual students
- Through their experiences students should have respect for others and the idea that all should be treated as equals

In pursuing this policy with regard to individual students, there are four categories of difference between groups of students, in which it is generally acknowledged that 'treatment as equals' may be problematic and for which it is therefore important to have specific policies. These are:

- Racial/Cultural differences
- Social-class differences
- Ability differences
- Gender differences

3.3.1 Racial/Cultural Differences

It is vital that staff avoid any racial bias or stereotyping with respect to the particular individuals who are from ethnic-minority backgrounds and that they are alert to and willing to challenge any such discrimination or stereotyping by other students.

3.3.2 Gender Differences

Equal opportunities in terms of participation are carefully considered, however, issues of prejudiced attitudes and stereotyping towards the opposite sex can be in existence and can potentially be magnified in our environments, especially given the contextual background and past experiences of our young people.

Staff should therefore be aware of this and should be willing to challenge any such discrimination or stereotyping by students. Furthermore such risks can be mitigated through planned teaching strategies.

3.3.3 Social Class Differences

Computing can form a prominent part of a child's domestic/home situation. However, some equipment can be very expensive and beyond the reach of many homes. Staff should be aware of making assumptions about student's levels of knowledge and opportunities for practising skills that invariably have a bearing on rate of progress. Within the home setting all children will have access to a PC for self study, homework and some social and leisure use.

3.3.4 Ability Differences

SES establishments are resourced such that Students receive a highly individualised curriculum based on their Portfolio of Achievement and Needs. Implicit in this is a response to differing levels of ability.

It is also important that protected characteristics as defined in the SES Equality and Diversity Policy are considered when planning and implementing teaching practice to ensure equal opportunities. This policy should therefore be read in conjunction with the SES Equality and Diversity Policy and Practice document and the DfE guidance around our equality duty.

3.4 COMPUTING AS A CROSS CURRICULAR SUBJECT

It is important to stress the inter-relationship of Computing with many other areas of the curriculum and with aspects of communication and social functioning beyond the Learning Centre. At each establishment every aspect of its operation is viewed as a potential vehicle for building upon children's knowledge, understanding and skills. All staff need to be skilled at finding unobtrusive ways of supporting cross-curricular links taking advantage of the total living experience without this intruding on the naturalness of domestic living.

Cross-curriculum dimensions provide important unifying areas of learning that help young people make sense of the world and give education relevance and authenticity. They reflect the major ideas and challenges that face individuals and society.

Dimensions can add a richness and relevance to the curriculum experience of young people. They can provide a focus for work within and between subjects and across the curriculum as a whole, including the routines, events and ethos of the school.

Cross-curricular working is essential to develop pupils Computing capability in other subjects and provide essential skills for the workplace. Cross-curricular Computing will ensure that the pupils have a better understanding of the contexts where Computing can be applied and used effectively. Pupils will become increasingly more familiar and understand the benefits that Computing has for their own learning and future careers as they make increasing usage of it across the curriculum.

3.5 PRESENTATION OF WORK

At SES we believe presentation of work is vital aspect of creating a positive and stimulating environment and in enhancing student motivation and self-esteem. Presentation of work can take a wide variety of forms ranging from:

- Written format
- Recording (oral and photographic)
- Displays
- Through use of computing and digital media
- Through witness statements created pupils and adults

Adults at SES, are expected to make a professional judgement with regards to each individual pupil's aptitude and ability in terms of facilitating presentation of work. We seek to continually implement our 'No Limits' thinking in the way we facilitate presentation of work ensuring feedback is given to support young people's continual

3.6 PROGRESSION IN COMPUTING

Progression in learning includes:

- An increase in knowledge, skills and understanding
- Moving from familiar to unfamiliar contexts
- Meeting needs which demand more complex or difficult solutions
- Students' awareness of their growing Computing capabilities, be it knowledge or skills

Whilst registering the ever-changing face of Computing the responsibility of all staff to ensure cross-curricular coverage is a crucial factor in planning for progression. All adults therefore need to understand how to foster students ability to use tools and information sources effectively to analyse, process and present information, and to model, measure and control external events. Key factors are:

- Using information sources and Computing to solve problems
- Developing communication and self-expression
- Using Computing tools and information sources, such as computer systems and software packages, to support learning in a variety of contexts
- Understanding the implications of Computing for working life and society

Use of Computing in lessons can be considered in three ascending stages:

- Computing can be seen as an extra item to be used in the lesson – e.g. work on a computer not integrated but seen as a useful addition either to extend student understanding of a particular point or because it is fun and will increase enjoyment of the lesson.
- Computing integrated into the lesson plan – e.g. Computing seen as another tool, sessions planned to make full use of this tool
- Use of Computing for tasks that could not be undertaken before and to tackle topics/themes in a different way – teachers and students partners in learning/exploration of new areas together

Therefore each teacher, to facilitate progression should be considering:

- Their own levels of expertise and accessing support if necessary
- Realistic planned integration of Computing into the specialist subject area

3.7 DIFFERENTIATION

Students at our establishments will clearly differ in ability and teaching should take account of this by providing a range of learning situations and approaches. In addition the philosophy of SES is such that personalised learning is a cornerstone.

Computing provides wide opportunities for differentiation by:

- Resource
- Task
- Support
- Outcome
- Response

However, differentiation does not happen automatically and careful consideration of student's abilities should be taken when planning Computing learning experiences. This process involves recognising the variety of individual needs, planning to meet those needs, providing appropriate delivery and evaluating the effectiveness of the activities in order to maximise the achievements of individual students.

Differentiation should involve:

- Providing a range of equipment appropriate for different students
- Using a variety of teaching methods to elicit a particular response
- Organising the groups in different ways appropriate to particular objectives
- Setting open-ended tasks so that students can respond at their level
- Issuing different 'challenges' to different students
- Providing extension work for students with greater ability
- Allowing time for individual diagnosis, teaching and feedback

The method of assessment and reporting should provide feedback, which is appropriate to students of differing abilities. It should aid their future learning by providing knowledge but should also give them support and encouragement.

More specifically, the teacher should consider:

- Resources reading levels and ease of use
- Availability of a range of media/software
- Availability of a range of support equipment
- Simplified software guides
- Provision of a variety of tasks to cover the main content area
- Take account of time available to support individuals/group
- Other adult/student support
- Student/student support e.g. pairing
- On screen help and support
- Various ways of praising achievement

3.8 ASSESSMENT AND RECORDING

Assessment is part of an ongoing process that informs future planning and subsequent learning. All assessments should take account of:

- Computing knowledge, skills and understanding acquired
- The context of the activity
- The purpose of the activity

Effective formative and summative assessment:

- is embedded in planning, teaching and learning
- requires a shared understanding of learning objectives and success criteria between teacher and learner
- draws on evidence of learners' achievement and progress from a wide range of contexts within and beyond the classroom
- values information that teachers retain in their heads, as well as concrete evidence produced by learners
- is based on evidence generated in the course of continuous teaching and learning, engagement with learners through observation, discussion, questioning, and review and analysis of work
- helps to shape and refine future teaching and learning, and to personalise the experience of individual learners
- provides the basis for discussions with learners themselves, their parents/carers and with other professionals about their strengths, areas for development and future learning targets
- is the foundation upon which periodic assessment can be based
- recognises and celebrates learners' progress in the light of their previous performance and motivates them to improve further
- promotes independence and self-motivation
- develops the capacity for peer and self-assessment among learners.

Assessment is a continuous process and testing and accreditation are built in at various stages of a students development.

Any system of evaluation and assessment should:

- Identify what has been taught and learnt
- Monitor students progress in each
- Monitor students progress in cross-curricular elements
- Establish students' needs as a basis for further planning and teaching.

Student involvement in the assessment and evaluation process is critical.

Evidence can be gleaned from:

- Observing
- Questioning and listening
- Discussion
- Written work, audio and video tape recording, drawings, charts, etc.
- Specific assessments tied to curriculum materials.

3.8.1 The marking of students work

Teachers' responses to students' work should be positive, encouraging, sympathetic, honest and appropriate. Marking should be completed in a

pragmatic way, as appropriate to the needs of the student and whenever possible completed in their presence. Further areas of study can then be negotiated with the student.

- Students should be made aware of the assessment criteria being employed, particularly before tackling new situations and subsequently when marking work
- Students should, as a result of the interaction, be aware of the next steps in their learning
- It is sometimes useful for students to respond to each others work

3.8.2 Record Keeping

Records are kept in the form of long term planning (Curriculum Overview), Medium Term Planning (unit objectives) and short term planning (detailed planning of learning episodes). A record of progress is evident in the on-going feedback (verbal and written) between adult and pupil. Where appropriate an evidence base is collated for an episode of learning this can take various forms e.g.files, exercise books, scrap books, digital media files.

3.8.3 Individual Programmes

- The Portfolio of Achievement and Needs of each student will inform the global priority targets to be addressed for the child.
- More detailed educational objectives will be identified by Learning Centre staff and students, and negotiated targets reached.
- Targets set will be specific, measurable, attainable, realistic and time related.
- Targets will always be compatible with the requirements of the National Curriculum and/or Portfolio of Achievement and Needs

3.9 STAFF DEVELOPMENT

Unlike many other subjects Computing advances at an exponential rate and its expansion in, and impact on, all walks of life grows unabated. The combination of these two factors, together with its cross-curricular nature, raise issues with regard to the progression and development of staff skills far beyond that of other subject areas. SES identifies and recognises this challenge. We respond to this from the outset in respect of appointment criteria as well as attention to the importance of increasing the Computing capability of staff via the Staff Support and Development Programme. All staff have a dedicated laptop for their use.

3.10 EVIDENCE FOR LEARNING

Every student has a unique and personalised learning journey that is based on their individual needs and starting point. Evidence of Learning enables Learning Centre staff to capture and create a rich, comprehensive picture and narrative that details learning and progress for each student. The subject knowledge sequences are available to track and record professional judgements on progress, alongside the students personalised EHCP and LCEP outcomes, and broader PAN targets

4 **IMPACT**

Computing contributes to students' enjoyment and sense of achievement by providing powerful tools to support their creativity, initiative and independent thinking. The subject enables students to explore possibilities, seek innovative alternatives, take risks with their thinking, make new connections, and adapt and modify their ideas.

Computing gives students tools to convey their ideas in original ways and to develop effective communication skills. Students appreciate the opportunities Computing gives them to investigate real people, events and places that are relevant to their own lives and to current world events. They also value the use of digital communication technology to engage with others when discussing issues or working collaboratively.

Computing provides access via the internet to a wealth of information about health and wellbeing, which students can use to inform healthy lifestyle choices. Dedicated nutritional software, and the use of dietary and nutritional models, can inform students' decisions about healthy eating and maintaining a balanced diet. Students can use monitoring technology during exercise and analyse data such as cardiovascular activity to help improve their physical performance and general wellbeing.

When using Computing, students learn to stay safe through understanding risk and developing safe working practices. Students recognise and apply health and safety measures that include the correct positioning of Computing equipment and chairs, and taking regular breaks from computer screens. Students learn about the safe and responsible use of Computing, in particular when using email and the internet. They learn to take responsibility for their own safety (for example, by avoiding disclosure of personal details). Students learn to consider the safety of, and show respect for, other people.

Computing plays an important role in contributing to young people's long-term economic wellbeing. The subject helps to develop individuals who can make informed decisions about when and how to use their Computing skills to support their learning and other work. Computing is fundamental to full participation in and engagement with modern society, and is essential for many jobs.

Through Computing students learn to obtain, analyse, develop and present information in formats that meet the needs of various audiences. Computing encourages students to be adaptable, to find creative solutions to problems, to plan and prepare, and to engage in effective collaborative working. These transferable skills help to equip students for lifelong learning and for the world of work.

The emphasis in Computing on communicating, exchanging and presenting information and ideas provides students with skills and opportunities to make positive contributions. Computing provides tools that support collaborative working and problem-solving locally and globally. The subject offers wide-scale access to information and ideas that enhance students' knowledge and understanding of local, national and international issues, enabling their contributions to be both informed and positive. Computing enables students to share and exchange information with people from diverse cultural and socio-economic backgrounds.

This experience can lead students to consider their own role in the world and how they might contribute in positive ways.

Computing provides students with tools that can help them to improve their understanding of their place in the world, to assess and develop values, and to consider their responsibilities to other people and to the environment. The programme of study encourages reflection on the increasing use of technology. Students consider social, ethical and cultural implications for individuals and society; these include issues such as sustainability, equality of access, security of personal information, copyright, plagiarism, and the responsible

Where appropriate students can have the opportunity to undertake an appropriate ITQ qualification, working through modules of their choice as soon as they are willing and capable; this may be provided regardless of age. Decisions on accredited courses and exams will be based on students' ability and maturity as opposed to chronological age. KS4 options may include relevant and appropriate courses from a range of awarding bodies.

5 SMSC AND BRITISH VALUES IN COMPUTING

At SES we believe the development of SMSC and promotion of British Values, should be embedded within all areas of teaching and learning across both the school and residential setting. This policy should be read in conjunction with the Spiritual, Moral, Cultural and Social Policy and Practice document and the British Values Policy and Practice Document.

5.1 SMSC

At SES we develop SMSC in many aspects of the curriculum through ensuring opportunities for SMSC development are extensive and frequent. These opportunities are reflected in planning documents as well as in outcomes for pupils.

Examples of SMSC development within Computing are:

Spiritual

- Independent time, allowing pupils to explore the use of digital technology at a self directed pace and free from external pressures.
- Pupils are encouraged to create and express ideas using IT for example; in presentation, recording or communication.
- Pupils are encouraged to express their thoughts and feelings when coming across communicated media.

Moral

- A variety of media can be explored giving value to discussion and on-going development of a knowledge base.
- Competency testing and regular supervision of usage provides on-going support and assists in shaping and developing each individuals' 'moral compass'
- Pupils are encouraged to explore moral and ethical themes within the contexts of their own lives.

Social

- Through computing teamwork and cooperation can be promoted through a range of differentiated learning activities.
- Pupils are encouraged to build networks, locally, nationally and internationally supported by relevant software and web based applications.
- Pupils are offered the opportunity to explore the manner in which computing has helped shape our society and locality.
- Independent and self-reliance is promoted through supported self regulation of access to computing/ digital technology devices.

Cultural

- Through the study of computing learners are able to identify and participate in the development and creation of an on-going digital culture.
- The use of computing and its historic development can be used to assist in developing an understanding of cultural influence.
- Understanding that use of computing devices and key principles of computing have shaped the world and country that we live in.

5.2 BRITISH VALUES

Promotion of British values is an integral part of life at SES. We believe that the promotion of such values should be inherent in teaching and learning as well as in the wider community. We fundamentally believe that the promotion of British Values is an essential strategy in preventing radicalisation. This document should therefore be read in conjunction with our Radicalisation Policy and Practice document. Examples of the promotion of British values within Computing are:

Rule of Law

- Pupils are offered the opportunity to explore themes relating to rule of the law and supported in considering the importance of rules and laws in respect of use of Information Technology and E-Safety.
- Whilst studying Computing, personalised rules and expectations are worked towards with supported understanding of potential consequences.

Democracy

- In Computing, pupils are offered the opportunity to take an active part in their personalised agreements.
- Importance of computing and, in particular, information technology in shaping decisions and thought processes in relation to individual freedoms and the political structured that govern.

Individual Liberty

- Pupils are given the opportunity to develop personalised learning focuses through use of Computing and indicate areas of study, which are of interest to them.

- At SES it is a fundamental belief that pupils should be respected and provided with a relevant learning environment in which to express themselves freely, yet respectfully; the integration and access to computing is viewed as key to this.

Mutual respect for and tolerance of those with different faiths and beliefs and those without faith

- Pupils could be provided with examples of computing use that explore the manner in which tolerance and faith can be impacted globally, nationally and locally.
- Collaborative working through the use of social networking and the use of computing to communicate internationally can assist in developing a wider appreciation of those with different faiths and beliefs.